material for the inulin are chicory roots which have been grown and processed under the conditions as defined in claim 65.--

REMARKS

Since Applicants' Supplemental Amendment B, filed July 12, 2002, does not appear to have been entered prior to the issuance of the Final Action mailed September 20, 2002, Applicants have resubmitted the proposed changes in the paragraph beginning at page 3, line 21 of the specification and in the paragraph beginning at page 15, line 18 of the specification. Also, in order to avoid possible confusion, Applicants have canceled all of the presently pending claims and replaced same with new claims 65-97 which correspond largely to the previous claims, except that independent claim 65 has been drafted to better distinguish the invention from the art cited in the previous Action. No new matter has been entered by any of the foregoing amendments. Pursuant to 37 CFR 1.121, a marked copy of the amended specification paragraphs showing the changes made therein accompanies this amendment.

In the previous Action, the Examiner considers the claimed subject matter to be obvious from Van Den Ende et al. (hereinafter called VDE) in view of the '872 U.S. Patent to Van Loo et al. The art rejection is respectfully traversed in view of the foregoing claim amendments, and the following comments.

A brief discussion of the present invention, as it relates to the prior art may be helpful to the Examiner in further consideration of the present application. An essential feature of the present claimed invention is that the chicory roots forming the source material in the process for the manufacture of inulin according to the present invention, have been seeded, grown and/or processed in a period that partially or wholly falls outside conventional ones (see e.g. Description p. 9, line 35 to p. 10, line 2 and p.11, lines 32-36). This feature clearly and unambiguously

emerges from an analysis of the claimed combination of features indicated in new independent claim 65 (which is the main process claim), namely the claimed combination of (i) the period wherein the chicory is seeded, (ii) the length of the growing and processing period, and (iii) the periods wherein low temperature conditions are allowed, or respectively not allowed.

The present claimed invention is directed to a process for the manufacture of "inulin" in which it is essential that the chicory roots that are used as source material are seeded, grown and/or processed under particular conditions and during well-delimited periods (as set forth in claim 65) which partly or wholly fall outside conventional seeding/growing/ processing periods (see e.g. Description p. 11, lines 32-36: p. 12, line 16 to p.13, line 2).

In rejecting the claims as obvious from the art, the Examiner states: "...Prior art (VDE) teaches growing periods climatic conditions including non-conventional periods June 1 to December 1 which comprises frost conditions..." (Office Action, p.4, lines 9-12) . In this respect, Applicants emphasize that VDE discloses a rapid change in carbohydrate concentrations as well as a rapidly breakdown of high DP inulin in the chicory roots from about 15 October onwards (VDE, p 48, 2nd half of right column) which in fact render the growing period disclosed by VDE non-suitable for the cultivation of chicory roots as source material for a process for the manufacture of inulin in accordance with the present claimed invention.

Indeed, according to the present claimed invention, no low temperature conditions (e.g. frost) should occur from the beginning of the third month of the growing period till the end of the processing period of the chicory roots. The growing period of chicory roots according to the present invention is thus clearly different and clearly not derivable from the period disclosed by VDE.

In the previous Final Rejection, the Examiner takes the position, "Applicants did not recite any limitation for inulin production under non-conventional growing periods" (Office Action, p. 4, lines 13-14). Applicants submit that the explicitly recited defined seeding/growing/processing periods in combination with the imposed climatologic temperature conditions and the length of the growing period for the source material for the manufacturing process of inulin, together with the requirement that the process further involves merely conventional manufacturing techniques, constitute well-defined limitations for the claimed inulin production under non-conventional growing periods. Thus, it is submitted that the claims explicitly define growing periods, and the Examiner has failed to adequately consider explicit limitations in the claims.

On page 4, lines 14-17 of the previous Action, the Examiner takes the position, "...optimization of conditions for mere improvement of existing processes has no patentable value (citing "*In re Cruciferous Sprout Patent Litigation*")." First, it is submitted that *In re Cruciferous Sprout Patent Litigation* is distinguishable on the basis that the claimed process is different since the present claimed invention calls for growing periods outside of conventional periods, while in *In re Cruciferous*, the claims were directed to inherent properties of a prior art product. That is to say, the fact that the chicory roots according to the present claimed invention are seeded/grown/processed partially or wholly outside the conventional periods makes the claimed subject matter essentially different from the one of the *In re Cruciferous Sprout Patent*. Accordingly, Applicants submit that *In re Cruciferous* is not relevant for the subject claimed invention.

Furthermore, Applicants emphasize that the present claimed invention is not directed to the result of a mere routine optimization of conventional process parameters/conditions. Indeed,

the present claimed invention relates to non-conventional process parameters/conditions, namely parameters/conditions which are not (implicitly) covered by conventional process parameters/conditions, and in fact are contraindicated by the conventional art. Accordingly, routine optimization of conventional process parameters/conditions could not lead to the process parameters/conditions of the present invention since the conventional prior art would teach against the claimed process conditions.

There are numerous differences not considered by the Examiner. For one, VDE teaches that towards the end of the growing season SST activity decreases and even stops, which concurs with a decrease and even a cessation of root growth and the inulin synthesis (no new kestose is synthesized). VDE also teaches that towards the end of the growing season and particularly from October 15 onwards (period wherein low temperature conditions/frost occur), inulinase activity appears and sharply increases with time, which results in a rapidly breakdown of inulin, particularly of high DP inulin molecules with formation of fructose and low DP inulin molecules (see e.g. VDE, Summary; p. 47 end of right column, and p. 48, 1st half of left column and 2nd half of right column). VDE attributes such inulinase activity to the activity of the FEH enzyme, but also to the possible inulinase activity of the FFT enzyme.

However, irrespective of the enzyme or enzymes and the mechanism responsible for the decrease of the inulin content and of the DP of the inulin molecules in chicory roots at the end of the growing season, VDE specifically and unambiguously teaches that low temperature conditions/frost are unfavourable for inulin synthesis in chicory roots and that such conditions activate inulinase activity which results in a cessation of inulin synthesis and even in a considerable breakdown of inulin. Thus, VDE merely confirms by an academic study of enzyme activities, the common knowledge that low temperature/frost conditions which occur at the end

of the conventional growing season have an undesirable, inulin degrading effect on chicory roots (see Description p.8, line 20 to p. 9, line 2).

Thus, VDE does not comprise any teaching at all that chicory roots for inulin production may appropriately be seeded, grown and processed under conditions where low temperature conditions/frost can occur. In fact, VDE teaches that low temperature conditions are to be avoided for the cultivation of chicory roots. Conventional chicory cultivation and in particular VDE thus clearly teach away from seeding /growing chicory under conditions where frost may occur.

Accordingly, the present claimed invention according to which chicory roots source material can be seeded /grown/ processed under such conditions that at a certain stage of the seeding/growing period low temperature conditions/frost may occur without causing considerable negative effects on the growth of the chicory roots, on the inulin synthesis in said chicory roots, on the final inulin concentration and on its DP in said roots, is clearly unexpected in view of VDE.

Since VDE teaches that low temperature conditions/frost during the growth period lead to rapid and considerable inulin breakdown, VDE clearly does not provide any teaching or suggestion to one skilled in the art to consider growing chicory roots for the manufacture of inulin under such conditions that during the growing period low temperature conditions/frost may occur.

Summarizing to this point, and with specific regard to the disclosure of VDE:

(1) It was unknown at the filing date of the present patent application whether or not low temperature conditions/frost at the seeding/early stage of the growing period of chicory would

impair, or even permanently block SST activity and thus impair or block root growth and inulin synthesis;

(2) It was unknown at the filing date of the present patent application whether or not low temperature conditions/frost at the seeding/early stage of the growing period of chicory would trigger inulinase activity (e.g. from FEH and/or FFT and/or any other inulinase) which may result in the presence of a significant inulinase activity in the chicory roots from the early growing period onwards. Such inulinase activity may then have a strong breakdown effect on inulin molecules already present in the roots;

(3) It also was unknown whether once inulinase activity was generated or activated in an early stage of the growing period, said inulinase activity would or would not remain active during the further growing period of the roots and accordingly have a baleful effect on inulin synthesis and inulin DP in the chicory roots during the further growing period; and

(4) One skilled in the art, and with the teaching of VDE, could not foresee with a reasonable expectation of success that chicory roots suitable for use as an adequate source material (i.e. with a normal yield of roots and that present a normal content of inulin of normal DP) in the process for the manufacture of inulin according to the present claimed invention, could be seeded/grown partially or wholly outside the conventional period as indicated in Applicants' claims.

Accordingly, the determination of the well-delimited period during which low temperature conditions are allowable according to the present invention is thus not an optimization of conventional conditions, as erroneously indicated by the examiner, but, contrarily, constitutes new, non-conventional process parameters and conditions.

Having regard to the above, Applicants state that the subject matter of the present invention is thus clearly unexpected in view of the teaching of VDE. Therefore, the claimed invention has to be considered non-obvious in view of VDE. Accordingly, the Examiner's rejection of the claimed process or its source material as being obvious in view of VDE clearly is not taught by the prior art, and is based on hindsight.

Since the primary reference VDE does not teach the claimed invention, and in fact, teaches against the claimed invention, no combination of VDE and the Van Loo et al. secondary reference reasonably could be said to achieve or render obvious the invention as defined by claim 65, or the various claims dependent thereon.

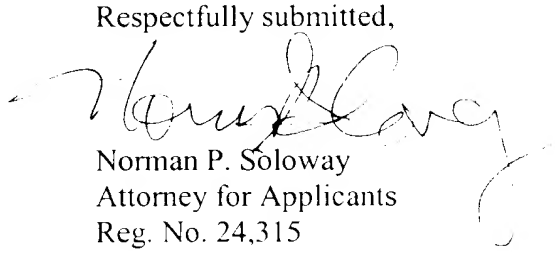
Similar comments apply to the claims directed to processes for the manufacture of partial hydrolysates of chicory inulin, a complete hydrolysate of chicory inulin and derivatives of chicory inulin according to further embodiments of the subject invention, i.e. as claimed respectively in independent claims 89, 93 and 97.

Having dealt with all the objections previously raised by the Examiner, the application is believed to be in order for allowance. Early and favorable action are respectfully requested.

Form PTO-2038 authorizing a charge in the amount of $740.00 to cover the Request for Continued Examination (RCE) fee accompanies this amendment.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 08-1391.

Respectfully submitted,



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MARKED COPY OF AMENDED SPECIFICATION PARAGRAPHS

SERIAL NO. 09/600,732

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MARKED SPECIFICATION PARAGRAPHS SHOWING CHANGES MADE:

Paragraph beginning at page 3, line 21:

The degree of polymerisation [($\overline{DP}$)] (DP) of native chicory inulin ranges from 3 to about 70. The punctual ($\overline{DP}$) of native inulin from chicory roots, which have been grown and processed under known, conventional conditions, ranges from about 10 to 14 (L. De Leenheer, o.c., p. 71), whereas the mean ($\overline{DP}$) of known standard grade chicory inulin, i.e. inulin obtained from chicory roots which have been grown and processed under known, conventional conditions, ranges from about 9 to 11, and is typically about 10.

Paragraph beginning at page 15, line 18:

In the processes according to the invention the said proper climatological temperature conditions are preferably such that during the concerned period immediately preceding the end of the processing of the chicory roots the temperature in [the temperature] thermometer shelter has not dropped below minus 1°C, which usually corresponds to a soil surface temperature of about minus 3° to minus 5°C. More preferably, the temperature in [the temperature] thermometer shelter has not dropped below 0°C, usually corresponding to a soil surface temperature of about minus 2°C to minus 4°C. Most preferably, the temperature in [the temperature] thermometer shelter has not dropped below plus 3°C.